

Construction Management Audit

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Executive Summary

This report reviews construction management processes citywide to identify best practices as well as opportunities for greater efficiency. The goal of construction management is to ensure that city construction projects are completed on time, on budget, and with high quality. This audit examined nine construction projects undertaken by the Cincinnati Recreation Commission, Greater Cincinnati Water Works, and Parks Department. Construction management in these department was found to be effective and efficient. All departments had appropriate budgeting and planning procedures in place. Contracts were let in accordance with city procedures and cost growth due to change orders was controlled. A weakness was noted in departments' project review processes.

The audit identified eight opportunities to strengthen construction management practices citywide. Three recommendations are made for all departments that undertake construction, three are made for the Finance Department's Purchasing Division, and two are for the Community Development and Planning Department's SBE program.

Departments should implement a documentation retention and storage policy to ensure they have sufficient maintenance records as well as any information that could be needed in a lawsuit. Departments also should make contractor review a part of project close out and communicate any problems with contractors to the Purchasing Department. Finally, departments should increase the liquidated damage values in their contracts to those recommended by ODOT in order to limit losses caused by construction delays.

With regards to the Purchasing Department, the audit found that Purchasing currently reviews change orders for all city construction projects. Purchasing should track the reason change orders are revised or denied to determine whether this is an effective control. Departments also cited the length of time needed to get a contract through Purchasing as an obstacle on construction projects. The projects reviewed in this audit took an average of 94.7 days to move from submission to signed contract. Purchasing should review its operations to identify changes that could streamline the bid process. Finally, communication between departments and Purchasing should be strengthened so that departments are more aware of the status of their bids.

The SBE program also has an impact on the way construction bids are awarded. The audit found confusion within departments about implementation of the program's rules, in particular Municipal Code section 321.37. The Solicitor's Office should provide a definitive interpretation of this section. Also, the audit could not determine whether the SBE office is reaching its goals for city contracts. The SBE office should produce an annual report on its effectiveness, as required by the Municipal Code.

The audit also identified industry best practices that can be implemented by any department undertaking construction. First, some departments have software programs that strengthen project management and records tracking. Water Works recommends a software package best suited to large departments while the Department of Transportation and Engineering has developed proprietary software that smaller departments could adopt. Second, the audit identified vigorous "right to audit" and "business ethics expectations" clauses that departments should use to strengthen their contracts and protect City interests.

Introduction

The City of Cincinnati's capital budget was \$258.9 million in 2004, a significant portion of which is devoted to spending on various construction projects. As part of the Internal Audit Division's 2004 work plan, we reviewed construction management processes to determine best practices as well as common weaknesses citywide. Internal Audit had last released a construction audit in May 1991.

The goal of construction management is to ensure that city construction projects are completed on time, on budget, and with high quality. Construction management practices were examined for the Cincinnati Recreation Commission, Greater Cincinnati Water Works, and the Parks Department. These departments were chosen as representative of City departments with varying construction budgets and a wide range of activities. In 2003, Recreation spent roughly \$7 million, Water Works spent \$60 million, and Parks spent about \$3.5 million of City funds on construction projects.

Scope and Methodology

The objectives of this audit were:

- to evaluate the effectiveness of construction management practices and techniques in Parks, Recreation, and Water Works;
- to identify weaknesses, if any, in construction policies and procedures, with specific attention to planning, budgeting, implementation, and close out; and
- to assess best practices that could improve construction management efficiency and effectiveness citywide.

The body of this report is divided into three sections that describe the findings for each of the above objectives.

Audit methodology consisted of three main components: background research, interviews, and project documentation review. Background research identified the most significant risks and problems encountered during construction management. The purpose of interviews with key staff members was to develop an understanding of the way construction projects are planned and implemented as well as common challenges faced by each department. Interviews were conducted with members of Recreation's Technical Services Division, Parks' Planning Division, and Water Works' Engineering Division. Staff in interfacing agencies such as the Finance Department's Purchasing Division, Community Development and Planning's Small Business Enterprise (SBE) Division, and Law Department were also interviewed about construction procurement. A member of the Department of Transportation and Engineering's Construction Management was interviewed to provide a comparative perspective and information on industry best practices.

The purpose of the documentation review was to evaluate the extent to which departments adequately documented and retained necessary information about completed projects. Proper documentation policies and procedures help mitigate the risk inherent to construction projects. We selected three projects from each department for documentation review. Based on project selection guidance in the GAO's "Case Study Evaluations" paper, the auditor identified construction projects completed after 2001 that were typical of the type of the construction work done by the agency. One large, medium, and small project was selected

for each department. Large projects were defined as costing more than \$1,000,000. Medium projects ranged from \$100,000 to \$1,000,000, and small projects were less than \$100,000. The following projects were chosen:

Department	Project Category	Project	Construction Cost
Parks	Small	Jergens Park Playground	\$8,459.00
Parks	Medium	Ault Park Walls and Walks	\$156,626.35
Parks	Large	Theodore Berry International Friendship Park	\$5,440,471.84 for park, \$894,874.15 for pavilion
Recreation	Small	Bond Hill Teen Center	\$29,104.67
Recreation	Medium	California Golf Maintenance Shed	\$395,131.00
Recreation	Large	Madisonville Recreation Center	\$3,100,631.10
Water Works	Small	Amor Place Water Main	\$62,500.60
Water Works	Medium	Kennedy Avenue Water Main	\$472,359.45
Water Works	Large	Harrison Road Pump Station	\$2,900,775.00

Upon beginning the documentation review the auditor learned that the Parks and Water Works large projects have not been completely closed out. A large sculpture and retaining wall are still planned for Theodore Berry International Friendship Park. There is ongoing litigation about change orders at the Harrison Road Pump Station. Thus these projects have not gone through a final close out and total final cost cannot yet be determined.

IAD reviewed documentation files for the selected projects and sought to determine the adequacy of documentation for five areas: planning, bids and contracts, in progress administration, payments and vouchers, and project review. Each of these areas was then evaluated as sufficient, insufficient, or none depending on the thoroughness of the documentation available for it. Project documentation files for these same projects were also examined in the Purchasing Division to determine how long the construction procurement process took.

In addition to interviews and documentation review, IAD made unscheduled visits to the projects selected for documentation review. We examined and photographed the sites to determine whether the planned components of the project had been built and that the construction was of acceptable quality.

The fieldwork for the audit was conducted between April 28 and August 4, 2004. This audit was conducted in accordance with generally accepted government accounting standards (GAGAS).

IAD would like to thank staff in Parks, Recreation, Water Works, as well as Law, Purchasing, SBE, and DOTE for their assistance and cooperation with the audit.

Findings and Recommendations

- I. **Objective:** To evaluate the effectiveness of construction management practices and techniques in Parks, Recreation, and Water Works

Finding: Construction management in these three department is generally effective and efficient.

All three departments have ten-year capital improvement plans that guide their construction priorities and decisions. Good planning extended to the budget area, with no departments reporting difficulty completing or financing multi-year projects, a common problem for many municipalities. Water Works and Parks report that current capital budget levels are sufficient to maintain existing infrastructure. Water Works long-range planning is particularly thorough, guided by recommendations from the 1987 Infrastructure Commission (Smale) report and their own five-year distribution master plan prepared by Black and Veatch. Parks has implemented a policy that requires any new acquisition or donation to be accompanied by a fund for the object's ongoing maintenance. Thus, new park construction requires an endowment to cover future maintenance costs. In contrast to these departments, Recreation is concerned about the infrastructure backlog that could develop if funding is not maintained at levels provided by Anthem demutualization funds.

All of the construction contracts examined were let properly in accordance with city procurement procedures. Monitoring of construction projects was generally adequate, with departments using more intensive inspections for larger projects. Documentation from project administration was usually thorough. In a few cases departments initially had difficulty or were unable to locate some project documentation. The results of the documentation review are outlined in the table below. Problems with insufficient or weak documentation are described more fully in Recommendation 1. The complete list of documents reviewed for the projects can be found in Appendix A.

	Bids and Contracts	Planning	Administ ration	Payment and Vouchers	Project Review
Parks—small (term contract)	None	Adequate	Adequate	Adequate	None
Recreation—small (term contract)	Adequate	Adequate	Adequate	Adequate	None
WW—small	Adequate	Adequate	Adequate ¹	Adequate	Adequate
Parks—medium (term contract)	Adequate	Adequate	Adequate	Adequate	Adequate
Recreation—medium	Adequate	Adequate	Adequate	Adequate	Adequate
WW—medium	Adequate	Adequate	Adequate	Adequate	None
Parks—large	Adequate	Adequate	Adequate ¹	Adequate ²	Adequate
Recreation—large	Adequate	Adequate	Adequate	Adequate	Adequate
WW—large	Adequate	Adequate	Adequate	Adequate ²	Adequate ²

1. These project files did not include daily inspector logs.

2. These projects are not closed yet and thus lack some typical payment or closeout documentation.

Departments were generally very successful at managing change orders and cost growth on the projects examined. Change orders ranged from 0.6% - 11.5% of bid price, with most projects within the 5-7% industry standard for construction projects. Change orders as a percent of total job cost declined as the projects grew larger. Total change orders could be calculated only for five projects because three projects were done by term contract and Water Works' large project is in litigation to determine the final size of change orders on the job. Departments were also found to process their invoices very quickly, in compliance with the City's prompt pay requirements.

Project	Initial Contract	Change orders	Change Order %
Water Works—small	\$59,095.00	\$6,811.20	11.5%
Recreation—medium	\$365,603.25	\$29,527.86	8.1%
Water Works—medium	\$463,455.12	\$18,378.23	5.9%
Parks—large	\$5,180,011.84	\$260,460.00	5.0% (park)
	\$889,874.15	\$5000.00	0.6% (pavilion)
Recreation—large	\$2,942,528.10	\$158,103.00	5.4%

One weakness in the construction management process is that departments generally do not undertake a systematic, final review of their projects to determine what went well and what should be corrected on future jobs. Nonetheless, the close out documentation was generally thorough. Although two small jobs had no close out documentation, files for larger projects included operations manuals, warranties, and as-built drawings, all of which are necessary for future building operations and maintenance.

- II. Objective:** To identify weaknesses in construction policies and procedures, with specific attention to planning, budgeting, implementation, and monitoring.
- Finding:** The audit identified several opportunities to improve construction management throughout the city. Three changes are recommended for departments undertaking construction. Three changes for the Purchasing Division and two related to the Small Business Enterprise (SBE) program are also recommended to improve construction citywide.

A. Recommendations for Departments

- 1. Each department should adopt and implement a written documentation policy that is flexible enough to accommodate projects of various sizes. At project close out, the contents of documentation files should be reviewed and placed in secure storage.**

Project documentation was generally thorough and sufficient for nearly all projects in all areas, as detailed in the documentation table above. Nonetheless, there were missing or hard to locate documents in every department. Recreation was initially unable to locate the project file for the Bond Hill Teen Center. It took several days to locate the Operations Manual and As-Built drawings for the Madisonville Community Center. At the Water Works, there were a couple of years in which the records office disposed of inspectors' notes and safety manuals for water mains projects. For the Harrison Road Pump Station and the Theodore Berry International Friendship Park, both complex multimillion-dollar projects, documentation was not coherently organized and the files contained a significant volume of redundant material. For Theodore Berry International Friendship Park, the records were stored in various places throughout the office (in part because of ongoing work). The construction manager also did not provide daily inspection reports, a standard practice in the construction management industry.

Departments also need to address the physical limitations of their storage space. Recreation mentioned that space limitations for record retention made it hard for them to find things. The Parks department was in the process of reorganizing its files. Water Works is in the process of creating a policy to archive the electronic documentation now generated by email and its construction management software.

Thorough and consistent documentation is important both to assist departments with the maintenance of their facilities and to help the city defend itself against any construction-related lawsuits. In particular, comprehensive daily inspection reports help provide a solid defense against construction claims. Difficulty finding documents can also create future problems when maintenance or remodeling is needed.

According to the Professional Liability Committee of the National Society of Professional Engineers, there are not industry standards for document retention due to the wide variety of project types, state laws, and legal opinions about what documents to retain. Thus, rather than make a list of documents to keep, the Committee offers the following guidelines for records retention:

- Make sure retention policies are written to avoid liability issues;
- If retention policies differ for different projects, include that in the written policy;

- If a firm's policy includes the destruction of documents, be sure documents are completely destroyed;
- Avoid extended retention of proprietary or confidential materials;
- Ensure that those in charge of document retention or destruction are trustworthy;
- Document the date on which records are destroyed;
- Make certain that stored documents are organized, labeled, secure, and easy to find; and
- Refrain from destroying documents if notice of a lawsuit has been served.

The Ohio Historical Society's Local Government Records Program recommends that project files including contracts, specifications, change orders and project reports should be retained at least 15 years after completion of the project. Building plans should be kept for the life of the structure and then appraised for their historical value.

The Department of Transportation and Engineering's Construction Management Section has developed a "Standard File index" of documents that should be retained (Appendix B). Similarly, the Plants section of the Water Works' Engineering Division has a color-coded filing system for each phase and a list of documents that should be in each file (Appendix C). Departments can use either of these lists as a basis for their own documentation standardization and retention policy.

2. Departments should make contractor review a standard part of project close out. Liens, lawsuits, and major problems with quality or cooperation should be adequately documented and forwarded to the Purchasing Department.

Departments are not keeping the Purchasing Division well informed about their problems with construction contractors. In the nine cases reviewed, two had significant problems with contractors, including lawsuits and liens. In neither case did the department involved inform Purchasing of the problems. Purchasing has found that when departments have a bad track record with a contractor, they provide documentation of those problems only immediately prior to another bid award, at which point it is too late to deny the company the award. If the City does not adequately monitor contractor performance, there is no way to stop giving work to contractors who are known to deliver a poor quality product.

Purchasing manages procurement for all departments and also tracks suspended contractors. It maintains a vendor performance file about vendors banned from city contracts for various reasons such as prevailing wage violation, unpaid taxes, or poor performance. Departments should share information about poor or problematic construction contractors with Purchasing so that other departments can be informed or the contractor can be suspended from doing future business with the city. Contractor review should become a standard part of project close out and poor contractor performance should routinely be documented and shared with Purchasing.

3. Departments should review the liquidated damages specified in their contracts. They should use the values recommended in ODOT's Construction and Materials Specification Manual when appropriate.

Liquidated damages are a penalty assessed against a contractor who fails to deliver a construction project in the time frame set out by the contract. In the nine projects examined, six were done with traditional contracts that included liquidated damages clauses (the other three used term contracts). The amount of the liquidated damages specified varied from \$100/day to \$400/day, with \$300/day being most common. The amount of liquidated damages specified did not correlate to the size of the project. There also is confusion in some departments about who determines the level of liquidated damages and how they are determined.

According to Purchasing, departments are responsible for determining the size of the liquidated damages they specify in their contracts. Purchasing recommends that departments typically use the table set forth in the Ohio Department of Transportation's "Construction and Materials Specifications Manual." The 2002 manual recommends the following:

Original Contract Amount	Liquidated Damages/Calendar Day
\$0-500,000	\$500
\$500,000 - \$2,000,000	\$750
\$2,000,000-\$10,000,000	\$1,250
Over \$10,000,000	\$2,000

Appropriate levels of liquidated damages provide contractors with an incentive to complete their work on time and also mitigate the city's costs when projects are delayed. Liquidated damages can be hard to receive in court because courts typically award judgements based on actual damages. This can be challenging for a department such as Parks, which has difficulty proving actual damages for delays to its projects. Nonetheless, departments should set liquidated damages to levels that accurately reflect the losses that construction delays create. Frequently the liquidated damages clause is used as a bargaining tool to negotiate the price of change orders at the end of a job. Appropriate damage levels are particularly important on large, complex projects with a greater likelihood various delays. When there are multiple sources of project delays, or when the city shares liability with the contractor, liquidated damages can be used to offset contractor charges and protect the city from large cost overruns.

B. Recommendations for Purchasing

4. Purchasing should continue reviewing change orders but should also track the number of change orders returned to departments for revision and the reasons for rejection. This information should be reviewed in one year to determine whether this is an adequate control and effective use of Purchasing resources.

After approval by the department managing the construction project, all change orders are reviewed and approved by the Purchasing Department. At present, Purchasing estimates that it reviews between 250-1100 change orders per year. All of these change orders are

reviewed by a Senior Buyer and then again by the Purchasing Agent. If the change orders represent more than 25% of the original contract they also will go to the Board of Control for approval.

Change orders can potentially be a large source of unbudgeted construction costs and must be reviewed carefully to ensure that they are necessary and fairly priced. A review should also determine if the underlying cause of the change order is systematic, such as a design flaw, and how to avoid similar changes on future jobs. Review can also help determine if a contractor habitually underbids city contracts with the intent to compensate for the low bid by creating unnecessary change orders.

Change orders are currently typically approved by the field inspector, his supervisor, the section superintendent, and then the department director before being sent to Purchasing for review. According to Purchasing, the most common reason change orders are returned to departments is because of missing signatures. If there are any other obvious red flags, such as work being done in another location or obviously beyond the scope of the original contract, then Purchasing will question that change order as well.

Currently, no documentation is maintained to determine how many change orders are sent back from Purchasing for further review or the reason for the rejection. Given the amount of review done within each department and the volume of change orders citywide, it is unclear whether Purchasing's review of change orders is an effective use of time. It is often difficult for someone not well acquainted with the job site to accurately assess the need for a change order. This limits the effectiveness of a review by someone not involved with the day-to-day construction. Purchasing does not currently track the number and reason that change orders are sent back to departments. If Purchasing would begin to monitor the number of change orders it returns to departments, the reasons for the rejection, and the ultimate outcome, this information could be used in the future to determine whether Purchasing is serving as an effective control on unnecessary change orders.

5. Purchasing should review bidding operations to identify internal and external changes that could streamline processing. Particular emphasis should be placed on the earlier parts of the bid process. The department should monitor and attempt to meet its benchmark of 45 days to get from bid to contract.

All three departments cited the length of time needed to get a contract through Purchasing as a major obstacle they faced on construction projects. Water Works stated that it usually takes three to four months but sometimes as many as six months to receive a signed contract after job information is submitted. They have increased the default values for purchasing time in their project management software from 60 to 90 days because that is typically how long it takes for them to get a contract. Recreation similarly believed that on average it takes about two months to get a signed contract once the winning bidder has been determined. Parks expressed concern about one time-sensitive contract that was not ready on time despite starting the bid process six months before the work had to begin.

Purchasing documents were reviewed to determine how long it took for the projects examined in this audit to move from submission by the department to a finished contract. On

average it took 94.7 calendar days from the time that Purchasing received all needed documents to the final contract signing. Total length of time ranged from 49 days for the Kennedy Avenue water main to 140 days for the Harrison Road pump station (see Appendix D for details on all projects).

Based on a description given by a Purchasing buyer, the audit identified 16 steps currently needed to move from bid request to contract. This includes sending the project to the EEO office, SBE office, Accounts and Audits, Law, the contractor, and the department itself twice. Not all of these steps are under the control of the Purchasing division. Moreover, the 94.7 day average given above is for contracts executed before the SBE program started, which means contracts now must now go through an additional step. Purchasing states that there is no obvious bottleneck in the process that delays contracts. Depending on the project, contracts can get held up at any point. Based on the projects examined for this audit, the bids appear to move rather reliably and swiftly through the later stages of the process: Accounts and Audits, Law, and final signature by the Purchasing Agent. Excluding the time the bid is in the City Bulletin for advertising, which is the longest step in the process and necessary to ensure a competitive bid, the main time requirements in the bidding process are:

1. Getting the bid signed by the contractor (16.5 days average);
2. Sending the bid to the department after bids are opened (13.8 days);
3. Awaiting department recommendation of a bidder (8.6 days);
4. Getting the bid into the Bulletin after department submission (7.9 days);
5. Receiving EEO approval (6.0 days);
6. Receiving Board of Control approval (5.2 days).

It is hard to determine the precise monetary impact of a slow bidding process, but departments believe it has a direct financial ramification. Recreation and Water said that contractors who do work for the City know it will take a long time to get a signed contract and inflate their prices to cover risks associated with that. For example, steel and scrap metal prices have been rising quickly and contractors pad their bids because they do not know what prices will be in a couple of months when they receive notice to start work.

The length of time necessary to get a contract through the Purchasing Division also inclines departments to use term contract rather than bid jobs out competitively. The Parks Department in particular prefers to use term contractors because they find it more effective and efficient than bidding out a contract. Purchasing contends that bidding out jobs nearly always results in a more competitive price than term contracts. If that is so, then departments routinely using term contracts to circumvent a lengthy bid process are also incurring greater expenses. Streamlining the bid process would encourage them to use the standard, more economical competitive bid procedure.

An extensive analysis of the Purchasing Department and the bid process was beyond the scope of this audit. Purchasing and departments should work together to identify ways to speed up the signing of contracts. This cursory examination suggests that emphasis should be on the early phases of the process where the longest delays are occurring.

6. **Communication between the Purchasing Division and other departments should be strengthened. Buyers should inform the department contract once a project is assigned and whenever a project is delayed in the procurement cycle. Departments should attend appropriate training to stay well informed about the purchasing process.**

Departments believe that there is poor communication between themselves and the Purchasing Division about the status of construction project bids. Departments lack a clear understanding of Purchasing regulations and how they are applied. For example, one department stated that it had been recently told that there was an unofficial limit on the size of jobs that could be done by term contracts. The department expressed frustration because they believe that this was a new rule change that was not communicated clearly to them. When IAD sought to clarify the limits for using term contracts, buyers initially provided conflicting information about whether there was such a limit. The Purchasing Agent clarified that there is a guideline of \$25,000 as the upper limit for term contract work. Another concern department expressed about communications is that they often do not know where their projects are in the bid the process or when they will be able to begin construction. Department members felt that the burden is on them to follow up with projects or they will not know their status. Finally, another department expressed frustration about term contracts ending without a new contract in place. Purchasing manages term contracts and ensures that expiring contracts are renewed or rebid, but this department said that a few of its term contracts had been allowed lapse. A lapsed term contract represents a considerable risk for departments that sometimes need emergency maintenance work.

Another area of confusion within departments is how the SBE program works and its relationship to Purchasing. The SBE office reviews all bids on a project and determines which do and do not meet the project's SBE participation goal. This information is returned to Purchasing, which then determines which of the compliant bids is the lowest. Not all departments are aware that they can work with the SBE office to set appropriate participation targets for their jobs. Despite the confusion in some departments about the program, Water Works lauded the SBE office for its cooperation in setting realistic, attainable goals for unusual projects. The SBE office understands that some highly specific projects cannot reach the standard 20% SBE participation rate goal. In such cases, the departments are encouraged to work with the SBE office to determine the appropriate target for the given job.

Poor communication can add needless delays into the procurement process and can also adversely effect the price of construction. Buyers need to keep departments informed about rule changes and the status of their bids. Communication should be improved when CFS's new purchasing module comes on line in the spring of 2005. Departments will be able to track the status of their projects on the City intranet. Purchasing should ensure that this tracking information is updated frequently so that departments can rely on this for their project's status. Departments can also strengthen their communication with Purchasing by ensuring that appropriate staff is trained in purchasing procedures. Purchasing and departments should implement the above recommendation to strengthen their communication and decrease unnecessary delays.

C. Recommendations for the SBE Program

7. The Solicitor's Office should provide a definitive interpretation of Code section 321.37 so that departments and contractors understand SBE program requirements.

There is a lack of clarity about Municipal Code section 321.37 with regards to awarding of bids based on their compliance with SBE Subcontracting Outreach program regulations. With regards to a bid award, the code states that bids shall be awarded to the lowest and best bidder and gives the following as consideration to determine the best bidder:

- (c) Factors to be Considered: Other factors that the city purchasing agent may consider in determining the lowest and best bid include, but are not limited to:
- (1) Information concerning the bidder's performance on prior and current contracts with the city; or
 - (2) Information concerning the bidder's current, past and proposed payment of prevailing wages; or
 - (3) Information concerning compliance with the "Non-Discrimination in Purchasing and Contracting" rules and regulations issued by the city manager pursuant to CMC Section 321-159; or
 - (4) Information concerning compliance with the "SBE Subcontracting Outreach Program" rules and regulations issued by the city manager pursuant to CMC Section 323-31.

In the event that the selection of the lowest and best bidder is based primarily upon factors 3 or 4 above, the contract award may be made subject to the following limitation: the bid may not exceed an otherwise qualified bid by ten (10%) percent or Fifty Thousand Dollars (\$50,000.00), whichever is lower.

- (d) Total Preference Percentages Permissible: The total accumulation of all preference percentages from all preference programs now in existence or hereafter established shall not exceed thirteen (13%) percent to a maximum of Sixty Thousand Dollars (\$60,000.00).

Departments do not clearly understand how subsection c is being applied to construction bids projects and when bids are subject to the 10% or \$50,000 provision. Departments have asked for clarification of this rule because of bid awards that they did not believe complied with the above regulation. The Solicitor's Office explained that subsection c should be interpreted as a means to differentiate among the bidders who meet the SBE goal for the bid. It gives the purchasing agent the discretion to award the bid to an SBE compliant contractor who is more expensive but has a greater percentage of SBE participation than another SBE compliant bidder. Thus, the \$50,000 or 10% is the upper limit when differentiating between two bidders who reach the SBE goal, not one who did and one who did not reach the goal. The Solicitor's Office holds that the "otherwise qualified bidder" specified in subsection c must meet the SBE goal as SBE compliance is one of the conditions of being qualified. Thus, bidders who do not meet the SBE goal cannot be considered for contract awards regardless of price.

Because "otherwise qualified bidder" is not formally defined anywhere, departments and contractors did not understand how to interpret this provision. The Solicitor's Office should

include a definition of an “otherwise qualified bidder” to clarify that meeting the SBE goal is a condition for being awarded a city contract. Purchasing Division policies are designed to remove subjectivity and opportunity for abuse in the city procurement system. The lack of clarity around Municipal Code 321.37 could create the appearance of subjectivity in the procurement process. The Solicitor’s office did state that it was planning to change the information about the SBE program on the bid sheets. Additionally, the office should also review subsection d to determine what implications it has for this part of the Code and whether it conforms to Council’s intent for the SBE program.

8. The SBE office should produce an annual report that documents the percentage of city contracts awarded to SBEs and the actual amount of spending on SBEs.

At this point, the audit could not determine whether the SBE office is reaching its participation goals for city contracts. The SBE office has not yet done a report analyzing how close the city has come to reaching its SBE goals. The SBE program began in April 2003 so there should now be enough projects complete for its effectiveness to be measured. Municipal Code section 323-17 requires an annual report detailing SBE contract awards. The report must include information about the number of contracts, categories of contracts, dollar value, and percentage of dollar value awarded to SBEs, MBEs, and WBEs as well as the minority group designation of the MBE awards.

With regards to construction, analysis of the program should also include an examination change orders to determine if they are having any impact on SBE compliance. According to SBE regulations, additional construction work done by change orders should maintain the same participation goals as the original contract. This information is not currently being monitored.

- III. **Objective:** To assess best practices that could improve construction management efficiency and effectiveness citywide
Finding: There are three main opportunities to improve construction management citywide. City departments are encouraged to implement project management software, vigorous right to audit clauses, and business ethics clauses for their construction contracts.

9. Project Management and Information Systems Recommendation

There are various information management systems city departments can implement for their construction projects. For project management, larger departments could select a program such as Primavera with multiple functionalities while smaller departments could adapt the proprietary software developed by the Department of Transportation and Engineering's Construction Management section.

Project management software allows departments to track a construction job through its various stages, keeping team members informed of the job's status. There is a strong project management system in place at the Water Works that allows it to track construction design and implementation. This program would be most useful in departments with a large volume of construction projects. Water Works uses Primavera to manage construction planning, design, contract administration, and archiving. Its most useful functionalities thus far have been to budget, schedule, monitor spending, allocate human resources, and determine staffing capacity. Primavera currently is used for planning and determining resource limitations, but eventually will be used for enterprise-wide reporting.

Primavera is a complex program and Water Works feels it is best suited to a large office such as MSD, Transportation and Engineering, or Public Services, which can support the initial investment and which would reap the greatest rewards from such a large program. Water Works emphasizes that successful implementation requires buy in from department leadership and a commitment to pushing through the significant learning curve.

As an alternative information management system, DOTE's Construction Management office developed its own project management software in Access. They felt that Primavera was too difficult for their purposes. Their software is most useful for financial management but also tracks project contact information, milestones, geotechnical testing, and inspector's reports. DOTE's software seems better suited to departments with smaller construction budgets and fewer projects.

In addition to its project management software, Water Works has created several other valuable information management tools that departments could apply to their own construction projects:

- The department's work order program also contains warranty information. When a staff member pulls up a maintenance work order, he can also check relevant warranty information to insure he is not working on something still covered by its warranty.
- The water mains section develops a formula for price estimates based on the prices in bids from the previous year. This model would be most useful to departments that undertake standardized construction projects year after year. The department compiles

bid information to create an estimating model that contains prices for various materials and estimates the amount of labor needed for various jobs. This model helps them project costs and allocate resources for the future year. They find that the formula is generally accurate for typical jobs, with the smallest and largest projects being the hardest to estimate.

- Just as it uses bid information to create an estimating model, the mains section also tracks low, high, and average bid for jobs and compares them to their own engineer's estimate. The department strives to have its estimate at the midpoint of the bids. This review serves as a check on their estimating formula to ensure that it is working properly.
- The mains section of the department tracks in-house design costs to those from outside design consultants. It can then use this information to ensure that in-house and consulting costs are appropriate.

10. Right to Audit Clause Recommendation

Construction contracts should supplement the City's general right to audit with a more vigorous, industry-specific clause that gives greater rights to examine contractor records.

Because of the nature of construction work, it is important that the City protects its rights to audit contractor records. Municipal Code section 321.75 contains a City's general "right to audit" clause that governs all contracts. While the clause may be sufficient for most City contracts, construction industry auditors have recommended right to audit clauses that ensure greater access to contractor and subcontractor records. As industry best practice, a more rigorous right to audit clause should:

- ensures records can be audited up to three years after final payment;
- provide an exhaustive list of the type of documents covered by the clause;
- require that all payees, including subcontractors and material suppliers to comply with the right to audit provision; and
- grant the right to interview former and current employees.

Appendix E provides an example of a strengthened right to audit clause. Purchasing should consider inserting this provision into all construction contracts, particularly for large or complex jobs where the potential for fraud or misappropriation is greater. The provision should be included not only for the general contractor, but subcontractors, architect and engineering firms, and construction management consultants.

11. Business Ethics Expectation Recommendation

Departments should include a business ethics expectations clause in their construction contracts.

Another industry best practice recommends including a "business ethics" clause in construction contracts so as to identify what behaviors will be considered appropriate and acceptable under the terms of the contract. The clause requires that contractors disclose any conflicts it has with the owner's (i.e. the City's) interests. It prohibits the contractor and suppliers from giving gifts to City employees and from accepting gifts from suppliers or

subcontractors working on the project. It also permits audits of owner records as to compliance with the business ethics clause. The clause requires that contractors disclose any conflicts it has with the City's interests. It prohibits the contractor and suppliers from giving gifts to City employees and from accepting gifts from suppliers or subcontractors working on the project. It also permits audits of owner records as to compliance with the business ethics clause. By including the business ethics expectations clause, the City demonstrates and emphasizes its commitment to ethical practices. The clause also provides a standard against which employee and contractor behavior can be evaluated if there is a question about whether an action was ethical. Purchasing should make the inclusion of a "business ethics expectations" clause another standard part of their construction contracts.

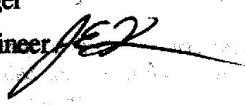
Agency Responses

City of Cincinnati



Interdepartmental
Correspondence Sheet

To: Mark Ashworth, Internal Audit Manager

From: Jeffrey E Koopman, Supervising Engineer 

CC: James Garges, Jennifer Fedorov

Date: 12/20/04

Re: Responses to Construction Management Audit

Attached are the Recreation Department responses to the recommendations of the Construction Management Audit of October 26, 2004. The Audit was well done and shows us a few deficiencies in our management practices which we will be correcting. We thank you for the hard work you and your staff put forth in the audit.

The Recreation Department has reviewed Internal Audit's audit of construction management practices for Recreation, Parks and Waterworks. Recreation appreciates the generally positive comments on the state of construction management practices of the Recreation Department. Recreation has the following comments on the report.

Recommendation 1:

Recreation understands the need for document retention and has been working to improve its filing systems for projects. We have added additional file cabinets for project records. We are also reviewing our document retention methods.

The Technical Services Division has been using a standardized set of file folders for construction of large projects such as recreation centers. The files are based on 16 Section Master Format for Construction Specifications adopted by the AIA and the CSI. The 16 sections are a construction industry standard for organizing shop drawings and submittals and allow easy cross referencing to the project specifications. We further create certain sections for the correspondence and other documents that are generated during the construction process. A copy of this the file list is attached to this document.

The life of documents used in the construction project is indefinite due to the nature of the built environment. Many documents need to be maintained for the life of the facility. The paper documents and the drawings will provide answers to questions or problems that will come up in the future.

Recreation Technical Services has as one of our goals for 2005 to improve our filing system. Part of this work will include creating additional storage space by removing project folders from our folders that are more than 15 years old. These folders would be moved to remote storage at the Dunham complex. The remote storage will be cleaned and organized as part of this process. Jeff Koopman will be responsible for getting this complete by the end of the year.

Recommendation 2:

An internal review will become part of all of our project closeouts. We will make informing Purchasing of documented problems part of our close out process. The Law Department would have to inform Purchasing of any litigation that happens since we are not informed of this type of thing until well after the fact. Jeff Koopman will be responsible for completing this by the third quarter of 2005 and will be one of our goals in our action plan.

Consistent guidelines for contractor performance should be prepared and approved by the Law Department with the understanding that they will defend the City and the employee in the case of a lawsuit over the use of the guidelines. Once this is established it will be much easier to have a truly City wide system in place. Don't know who would do this.

Recommendation 3:

Recreation Technical Services will begin using this table on all projects we are responsible for beginning immediately Jeff Koopman will be responsible for this being implemented.

Recommendation 4:

Recreation Technical Services agrees with this recommendation.

Recommendation 5:

Recreation Technical Services would like to see the time from recommendation to award shortened. Indication from contractors who deal with other municipalities is that awards generally take thirty days from bid closings. One of the main comments we have heard is that the type of bond form that the City requires takes extra time to have completed by the bonding company.

Recommendation 6:

Recreation Technical Services agrees with this recommendation and will cooperate with purchasing in whatever way we are able to.

Recommendation 7:

Technical Services agrees with this recommendation.

Recommendation 8:

Technical Services agrees with this recommendation.

Recommendation 9:

The projects we build are lump sum projects with job specific specifications and plans. We are currently implementing a simple tracking program for projects under construction. We hope to expand this to the design phase of our projects. We would be very interested in looking into DOTE's project management software and possibly using it for our projects. Jeff Koopman will contact DOTE for further information. Complete by the third quarter.

Recreation's maintenance divisions are on the same work order system as Waterworks. We are formulating a policy that will require letters of substantial completion be forwarded to the maintenance divisions for inclusion in the work order system.

We maintain records of bids we receive and use them for estimating similar jobs such as tennis court resurfacing. The majority of our large projects are one off projects that are not similar in scope.

The Recreation Department generally uses consultants for projects that are large in nature or need expertise that we do not have in house. Cost estimates for these projects are done by the consultants.

All of these ideas are currently being implemented. We will continue to increase the use of these programs.

Recommendation 10 and 11:

These two provisions should be included in the General Conditions of the contract. The City uses three forms of General Conditions that are prepared by Purchasing and reviewed by Law, 4-1 Building and Structure Construction, Heavy and Highway Construction and 4.49 Demolition. We could include them in our general specifications if they were put in a form that Law would approve.

City of Cincinnati



Interdepartment
Correspondence Sheet

December 14, 2004

To: Mark Ashworth, Internal Audit Manager
From: David E. Rager, Director, Water Works
Copies: Paul Tones, Water Works Chief Engineer
Subject: Construction Management Audit

The following comments are in response to your memo dated October 26, 2004, transmitting the Performance Audit of Construction Management report. During our exit conference to review the report held on November 24, 2004, you requested that we forward our comments to you for inclusion in the final report to the Audit Committee and City Manager for submission to Council.

In the Findings and Recommendations, Objective II, there are three recommendations for departments where weaknesses have been identified in construction policies and procedure. Each recommendation will be addressed separately using your suggested response format.

Recommendation #1: Implement a document retention and storage policy

The Water Works has practiced document retention and storage on construction projects for many years. The maintenance and operation of our facilities is dependent upon as-built drawings and operations manuals that are produced at the time of original construction of the facility. While procedures have been in place, for practical purposes, we recognize that a centralized written policy would clarify procedures for everyone involved. Attached is the policy that was recently put into place for document retention and storage for Water Works construction projects. The Water Works Chief Engineer's office will be responsible for implementing the documentation procedures that are already in effect.

Recommendation #2: Make contractor review a part of project close out and communicate any problems with contractors to the Purchasing Department

The Water Works has regrettably had to take steps to bring sanctions against two contractors over the past three years for issues of poor performance and unethical business practices. These cases have been documented through both the Purchasing Department and the Law Department. Even with this active approach of reviewing contractor performance, we believe that a more standardized contractor review process on

every construction contract would be beneficial. The Water Works recommends that a citywide committee be formed under the auspices of the Purchasing Department to develop a project closeout Contractor Performance Evaluation form that will be submitted to Purchasing at the end of each construction project. The Water Works Chief Engineer will represent our department on such a committee and will take the lead in approaching Purchasing with the concept. With the acceptance of this recommendation, an evaluation form and procedure should be able to be in place by June 1, 2005.

Recommendation #3: Departments should increase the liquidated damage value in their contracts to those recommended by ODOT

The Water Works stipulates liquidated damages on all construction projects and uses the ODOT damage values on all water main projects. In the case of plant facility projects, the ODOT damage values are used as a guideline, but liquidated damage values may be set higher, or in some rare cases, lower depending on the complexity and special conditions of the project. The Water Works will continue to specify liquidated damages on all construction contracts and apply the ODOT damage values as the norm, but recommends some flexibility on projects with conditions that merit damage values not set at ODOT levels. The Water Works Chief Engineer will be responsible for evaluating the damage amounts set for projects not utilizing the ODOT values. This approach is currently in place and recommended for continued implementation.

The Findings and Recommendations, Objective III, also suggested three opportunities to improve construction management citywide. Our comments are as follows:

Recommendation #9 – Project Management and Information Systems

The report points out that the Water Works uses “strong” project management software to track various stages of the construction management process, and several other valuable information management tools to track the details of projects. These information system tools are developed and administered by the Engineering Division staff under the supervision of the Water Works Chief Engineer.

Recommendation #10 – Right to Audit Clause

The Water Works supports the recommendation that construction contracts should supplement the City’s general right to audit with a more vigorous, industry-specific clause that gives greater rights to examine contractor records. It is our opinion that this would be handled most appropriately in the standard Purchasing “boiler-plate” portion of all construction contracts.

Recommendation #11 – Business Ethics Expectations

Our comments are similar to recommendation #10 above; include a business ethics section in the Purchasing “boiler-plate” portion of all construction contracts.

The Water Works wishes to commend and thank the Internal Audit Office for a thorough process of auditing construction management practices. We uncovered a few shortfalls in our processes during the exercise that are now being shored up, and we were confirmed by the audit outcome of numerous strong management practices that we already have in place.

DER:alt

Attachment

December 2004

**Policy on Retention & Storage
Of
Construction Project Documents
Greater Cincinnati Water Works
Engineering Division**

The Engineering Division of the Greater Cincinnati Water Works is responsible for construction management of capital improvements, including planning, design, contract administration and inspection. Project documentation and retention are a vital part of the construction management process. It is the policy of the Water Works Engineering Division that documents associated with the construction and/or modification of Water Works facilities/infrastructure will be retained at a minimum in accordance with the provisions of Cincinnati Municipal Code Chapter 206 City Records Commission, and in most cases, permanently.

While a project is in an 'Active' status, project files will be maintained by the project manager. At the time of project closeout all files will be transferred to the supervisor of the Records Section of the Engineering Division for the project files to be prepared for final retention. Final disposition and retention of all project documents will be under the direction of the Water Works Chief Engineer.

Attachments:

GCWW Systems Facilities Water Main Project Files Document Retention & Storage of Capital Improvement Projects (Sept. 1, 2004)

Plant Facilities Central Project Administration Closeout File (April 21, 2004) (*See Appendix C*)

GCWW System Facilities Water Main Project Files Document Retention & Storage of Capital Improvement Projects

Throughout the course of a project, from inception to completion, Planning, Design, Survey, Inspection, and Contract Administration are involved. At the completion of each project, all project related information is to be permanently stored in the master project file (resides in Design).

There are key elements to each project that are important to microfilm or scan into our records. Most critical and most often referenced are the As-Built Drawings (Inspector Reports) and the original Design Contract Plans. Also, some project related correspondence and payment history, including all financial information, may be identified as important for scanning into the Records files.

Information retained in the Project Folder that is deemed unnecessary for Scanning/Microfilming will be contained in a folder labeled “Do Not Microfilm”. It is extremely important that these records still be permanently maintained in the Project Folder for reference in later years.

The following information must be retained in each Project Folder for Scanning Purposes:

- Original Contract Design Plans
- Inspector’s Report (provided by Contract Admin – Project Engineer)
- All Payment History
 - (Consultant/Geotech/Permit Fees/Contractor
 - Change Orders including Justification
 - Forms 66 & 104
 - Prevailing Wage Affidavit
 - Material Paid in Full Affidavit
 - Bonding Company Issues
 - Lien related information and Release
- Correspondence (all correspondence for the project should be merged together chronologically. This must include all initial Planning letters/memos, Design letters, routine emails, Contract Administration letters, complete correspondence file from outside engineering firm if applicable)

The following information will be retained and labeled “Do Not Microfilm”. This will be kept in the Project Folder provided to the Records Section:

Each Section will have its own Folder.

Project Planning

- Design Survey
- Design Project Cost Estimate

- Geotechnical Report
- EPA Approvals, where applicable
- Street Opening Permits (City, County, ODOT, etc.)

Bids & Documents

- Department Requisition Form (processed Chief Engineer's Clerical Assistant)
- Original Bid document (kept in the Design Project Folder)
- Bid Comparison Sheets (kept in the Design Project Folder)
- Wage Determination Request (processed Chief Engineer's Clerical Assistant)
- Contract, including insurance & surety (kept in Contract Admin – Project Engineer)


In Progress Contract Administration

- Notice of Contract (Notice to Proceed) (kept in Contract Admin – Project Engineer)
- Subcontractor Approval Forms (kept in Contract Admin – Project Engineer)
- Contractor's Safety Manual (kept in Contract Admin – Project Engineer)
- Pre-construction Meeting Minutes/Notes (Project Engineer)
- Material Certifications (provided by Contract Admin – Project Engineer)
- Product Specification Approvals, where applicable
- Inspector's Pay Item Summary Sheets (Supervisor of Construction Inspection)
- Contractor's Original Construction Schedules (provided by Contract Admin – Project Engineer)
- Contractor's Updated Construction Schedules (provided by Contract Admin – Project Engineer)
- Daily Activity Log/Progress Meeting Minutes
- Inspector's Daily Log (provided by Supervisor of Construction Inspection)
- In-progress testing (WQ testing results, C-tests, material tests, etc.) (Supervisor of Construction Inspection)
- Punch Lists (Project Engineer)
- Customer Complaints & Resolution (provided by Contract Admin – Project Engineer/ Supervisor of Construction Inspection)
- Material Failures & Investigations and Related Warranties (Project Engineer)
- Project Photos, where applicable
- Videotape retention (In the event of any disputes with the contractor or property owners, retain the video tape for 3 years; otherwise, maintain the tape for a period of 1 year from completion of construction; These tapes do not need to be part of the project folder but should be kept in a central location in Inspection)
- All other information from Supervisor of Inspection Project File (provided by Contract Admin – Supervisor of Construction Inspection)



City of Cincinnati

Date: December 28, 2004

To: Mark Ashworth, Internal Audit Manager
From: Bernadine R. Franklin, Finance Manager/City Purchasing Agent 
Copies to: William E. Moller, Finance Director
Subject: Purchasing's Review of the Construction Management Audit

The Purchasing Division has reviewed Internal Audit's construction management checkup and supports most of the findings. However, this Division would like to offer certain policy guidance on some of the recommendations:

A. Recommendations for Departments

1. Each department should adopt and implement a written documentation policy that is flexible enough to accommodate projects of various sizes. At project close out, the contents of documentation files should be reviewed and placed in secure storage.

Purchasing offers to provide a general document of best practices for each department to use as a model in developing a written documentation policy. This general policy guide would be flexible to accommodate projects of various sizes. This general information can be obtained through the National Institute of Governmental Purchasing (NIGP) and contains the best practices as determined by experts in this field. It is also recommended that the policy be reviewed by the City Purchasing Agent for accuracy and consistency.

2. Departments should make contractor review a standard part of project close out. Liens, lawsuits, and major problems with quantity or cooperation should be adequately documented and forwarded to the Purchasing Division.

Departments should forward documentation to Purchasing. The departments need to keep the Purchasing Division informed about vendor performance to ensure we are not letting contracts to substandard performing vendors.

B. Recommendations for Purchasing

4. Purchasing should continue reviewing change orders, but should also track the number of change orders returned to departments for revision and the reasons for rejection. This information should be reviewed in one year to determine whether this is an adequate control and effective use of Purchasing resources.

Currently, Purchasing is tracking change orders via an excel spreadsheet, noting the reason for rejection or return and the re-submit date, if any, for the change orders. This information can be reviewed sometime in the future to determine the effectiveness of this review.

- 5. Purchasing should review bidding operations to identify internal and external changes that could streamline processing. Particular emphasis should be placed on the earlier parts of the bid process. The department should monitor and attempt to meet its benchmark of 45 days to get from bid to contract.**

The Purchasing Division agrees with this recommendation and will be sending a request for legal services to the Law Department soon to make changes to the bidding process, reducing the time for contracting. Purchasing will be looking at convertible bonds and changes to bidding procedures. Purchasing disagrees, however, with the assessment of time required for contracting. Internal Audit used only eight projects out of hundreds, and several of the projects selected were very difficult for various reasons. Also, the time required for corrections that extend the bid due date do not appear to be delineated. Purchasing also disagrees that the time to bid causes departments to use term contracts. This may be the case occasionally, but more often, poor planning by the department and the desire to be selective in obtaining a contractor, thereby avoiding the SBE program, determines this decision.

- 6. Communication between Purchasing and other departments should be strengthened. Buyers should inform the department contact once a project is assigned and whenever a project is delayed in the procurement cycle. Departments should attend appropriate training to stay well informed about the purchasing process.**

The Purchasing Division is working on this as well, and the new EPS module will address most of these concerns. Communicating via e-mail with the department during the contract process will also aid in relaying information.

Implementation of the recommended changes to procedures and policy will be handled by the Senior Buyer responsible for distribution of construction projects and the City Purchasing Agent. Implementation of prior listed endorsements and policy guidelines should be complete by the first half of 2005.

BRF:sh

Appendix A: Documentation Review Template

Project Department—Project Name		
Project Begins: Project Ends: Contract Term: Contract:		Initial Contract: Change Orders: Total Spent: Change Order %:
Documentation Type	Main Documentation Examples	Evaluation: None, Inadequate, or Adequate
<u>Bids and Contracts</u>	<ul style="list-style-type: none"> • Department requisition form • Bid document • Bid comparison sheets • Wage determination request • Contract, including insurance and surety • Notice of Contract • Subcontractor approval forms • Safety manual 	
<u>Planning</u>	<ul style="list-style-type: none"> • Needs survey • Drawings or blueprints • Cost estimate • Building permits • Product specification approvals • Schedule • Geo-technical testing • Pre-construction meeting notes 	
<u>In Progress Administration</u>	<ul style="list-style-type: none"> • Contractor's daily activity log or progress meeting minutes • Inspector or construction manager diaries or reports • Updated schedules • Requests for information (RFI's) • Change orders • Routine email or correspondence • In progress testing, such as concrete strength • Photos 	
<u>Payment and Vouchers</u>	<ul style="list-style-type: none"> • Pay applications—pencil and final • Forms 104 and 66 (employees and subcontractors paid) • Prevailing wage affidavit • Material paid in full affidavit • Pay vouchers and supporting documentation • Lien release 	
<u>Project Review</u>	<ul style="list-style-type: none"> • Punch list(s) • Building or occupancy permit • Operations and Maintenance Manual • Certificate of Substantial Completion • As-built drawings • Warranties • Photos 	

Appendix B: DOTE Construction Management Section's Document Filing Guidelines (from "Construction Management Manual," March 2001)

USERS INSTRUCTIONS

In order to provide uniformity of procedures on construction contracts, a Standard File Index has been developed. For projects with multiple construction contracts, the contract number for each contract will precede the file numbers of the Standard File Index.

The Standard File Index has been developed around the Table of Contents of the Construction Management Manual. For instance, Section 7.0 of the CM Manual deals with Cost Control and cost control files are numbered 700 to 799 in the File Index. Similarly, Section 8.0 of the RE Manual deals with Quality Assurance and Control and all QA/QC files are numbered 800 to 899 in the File Index.

There are 11 sections in the updated CM Manual and there are 14 sections in the File Index. This is because there are more filing requirements than there are CM Manual requirements.

There is frequently a need for cross-filing documents under subject headings that relate to the actual work. To provide subject files, a 1300 series section has been provided for building-type contracts and a 1400 series section has been provided for highway, bridge and heavy construction type contracts.

The File Index has been developed to provide maximum flexibility within the standard procedure. Any file can be subdivided and sub-subdivided as the need arises. A wholly numerical numbering system is used for simplicity, using only standard numerals.

CONTRACT #	FILE #	FILE SECTIONS
XXXXXX	0 – 99	General Information
	100 – 199	Pre-Bid Procedures
	200-299	Award Procedures
	300-399	Construction Start-Up
	400-499	Communications Control
	500-599	Drawing Control
	600-699	Schedule Control
	700-799	Cost Control
	800 – 899	Quality Assurance and Control
	900 – 999	Safety & Loss Control
	1000 – 1099	Public Relations
	1100 – 1199	Contract Completion and Close-out
	1200 – 1299	EEO and Subcontracting
	FILE #	FILE 0 – 99 GENERAL INFORMATION
	001	Consultant Agreements
	011	Utility Agreements and Correspondence
	012	Right-of-Way Agreements and Correspondence
	013	Land Acquisition and Correspondence
	014	Survey Records
	015	Agreements and Correspondence with other Statutory Authorities

FILE 100 – 199 PRE-BID PROCEDURES

110	Invitation to Bid – Bidding Procedures - Bidders Lists
111	Pre-Bid Correspondence
120	Constructibility Review
130	Final Bid Document Review
140	Pre-Bid Conference – Agenda – Minutes

FILE 200 – 299 AWARD PROCEDURES

210	Bid Tabulations, Evaluations, and Engineer's Estimate
230	Pre-Award Conference –Agenda – Attendance – Minutes
231	City/Contractor executed contract or agreement
250	Notice of Award/Notice to Proceed/Notice of Commencement
240	Pre Construction Conference Agenda – Minutes – Attendance
220	Service Estimates

FILE 300 – 399 CONSTRUCTION START-UP

320	Field Office/Workshop Layout Plans
350	Testing Authorization
360	Permits
371	Agreements between Contractor and Local Businesses/Land Owners
380	Subcontractors – Approvals and Correspondence
390	EEO/AA Contract Compliance Correspondences
391	Suppliers Correspondence
370	Press Releases and Notice to Public

FILE 400 – 499 COMMUNICATIONS CONTROL

410	Correspondence To/From Designer of Record
411	Correspondence To/From Contractor
412	Correspondence To/From Public Utilities
413	Correspondence To/From Statutory Authorities
414	Correspondence To/From Consultants
420	Inspectors Daily Reports (IDRS)
421	Monthly Construction Report
430	Progress Meeting Minutes
440	Agency/Utility Coordination Meeting Minutes
441	Other Meeting Minutes
450	Photographic Records

FILE 500 – 599 DRAWING CONTROL

510	Drawing Distribution Transmittals
511	Drawing Changes- transmittals
520	Shop Drawings, Working Drawings, Samples Submittals and Transmittals
521	Field Sketches
530	Requests for Information/Clarification
531	Construction Notices
540	As-Built Drawings – final transmittal

FILE 600 – 699 SCHEDULE CONTROL

610	Contract Construction Schedule
620	Short Term Schedules

- 630 Schedule Updates and Revisions
- 640 Schedule Correspondences and meeting minutes

FILE 700 – 799 COST CONTROL

- 710 Payment Applications – Correspondence
- 711 Partial Payments / Daily/Monthly Quantity Record Summaries
- 712 Unit Prices
- 713 Schedule of Values (Lump Sum Billing Breakdowns)
- 720 Contingency Allocations
- 730 Change Orders
- 731 Requests for Proposals
- 732 Force Account Records
- 733 Value Engineering Change Proposals
- 740 Claims

FILE 800 – 899 QUALITY ASSURANCE AND CONTROL

- 810 City QA/QC Plan and Correspondence
- 820 Contractor QC Plan and Correspondence
- 811 QA/QC Meeting Minutes
- 840 Testing Correspondence
- 841 Test Reports
- 860 Survey Control Records
- 870 Non-Conformance Notices and Log
- 880 Quality Promotion Correspondence
- 881 Awards, Commendations, Recognitions

FILE 900 – 999 SAFETY AND LOSS CONTROL

- 920 Contractor's Safety Plan and Correspondence
- 921 Minutes of Safety Meeting – City/Contractor
- 922 Safety Inspection Reports
- 923 Accident Reports
- 924 Stop Work Notices
- 960 Environmental Issues

FILE 1000 – 1099 PUBLIC RELATIONS

- 1010 City Council and other Referrals
- 1020 Contacts with Public – Complaints, Queries, Notices, etc
- 1030 Contacts with News Media – Interviews, Reports, Notices, etc.

FILE 1100 – 1199 CONTRACT COMPLETION & CLOSE-OUT

- 1110 Close-out Procedures and Checklist
- 1121 As-Built Drawings – Record Drawings
- 1131 Equipment Start-up Correspondence
- 1130 Warranties and Guarantees
- 1111 Certificate of Substantial Completion and Punch List
- 1180 Project Financial File
- 1120 Close-out Documentation
- 1113 Post Construction Evaluation

FILE 1200 – 1299 EEO and Subcontracting Requirement

1210	Subcontractor 208 forms
1220	EEO/Subcontracting correspondence

Appendix C: Water Works Plant Facilities Section's Document Filing Guidelines

Following are the files to be kept for each of the projects. Color code the files as shown.

PROJECT INITIATION (orange folders)

Goals of Project

Benefits of Project – economic and non-economic

Estimate of Cost & Project Schedule – total cost and cash flow

Accounting Forms

STUDY PHASE

- **CONSULTANT SELECTION, SCOPE (pink folders)**
 - Request For Proposals – Drafts & Final
 - Committee Members – who & why
 - Consultant intent to submit or decline
 - Evaluation of Proposals – individual and total
 - Interviews & Evaluations
 - Final Definition of Scope & Price & Scope Changes
- **PERFORMANCE OF STUDY (yellow folders)**
 - Pay Requests to Consultant
 - Kick Off Meeting
 - Information Provided to Consultant – drawings, emails, correspondence, phone calls
 - 25% Meeting
 - 60% Meeting – include schedule & cost estimate
 - 95% Meeting
 - Other Meetings
 - OEPA Permit & Info
- **FINAL RESULTS (teal folders)**
 - Final Document
 - Difference Between Project Initiation Scope & Final Document and why
 - Project Schedule & Estimate – total cost and cash flow
 - Documentation of Refining & Consensus of Final Document

DESIGN PHASE

- **CONSULTANT SELECTION, SCOPE (navy folders)**
 - Request For Proposals – Drafts & Final
 - Committee Members – who & why
 - Consultant intent to submit or decline
 - Evaluation of Proposals – individual and total
 - Interviews & Evaluations
 - Final Definition of Scope & Price & Scope Changes
 - Other Folders
- **PERFORMANCE OF DESIGN (white folders)**
 - Pay Requests to Consultants
 - Kick Off Meeting
 - Information Provided to Consultant – drawings, emails, correspondence, phone calls
 - 25% Meeting

60% Meeting – include schedule & cost estimate
95% Meeting
Other Meetings
OEPA Permit
Building Permit

- FINAL RESULTS (blue folders)
 - Final Document
 - Difference Between Project Initiation Scope & Final Document and why
 - Project Schedule & Estimate – total cost and cash flow
 - Documentation of Refining & Consensus of Final Document

PROCUREMENT PHASE

- PRIOR TO BIDDING (burgundy folders)
 - Requisition
 - Form 217
 - Confidential Estimate
 - Purchasing Forms
 - Addendums
 - Bid Document
 - Contractor Questions
 - SBE Information/Targeted Areas
- BIDS TO CONTRACT (bright green folders)
 - Bid Opening & Bid Tab
 - Award Letter
 - SBE Contractors & Percentages

CONSTRUCTION PHASE

- PRIOR TO CONSTRUCTION (lavender folders)
 - Contract
 - Notice of Commencement
 - Material Safety Data Sheets
 - Notice to Proceed
 - Contractor Employee Security
 - Schedule of Values
 - Project Schedule
 - Submittal Schedule
 - Sub-Contractor List and Approval Forms
- DURING CONSTRUCTION/ADMINISTRATION (red folders)
 - Contractor Pay Requests
 - Requests for Extension of Time
 - Change Orders
 - Progress Meetings
 - Progress Schedules
 - Notice of Substantial Completion
 - Notice of Final Completion
 - Consultant Payments
 - GCWW Internal Correspondence & Notes

Permit to Occupy
Payments to testing firms (separate folder for each company)
Payments to any other entities (separate folder for each entity)

- DURING CONSTRUCTION/ FIELD (gray folders)
 - Submittals
 - Start-Up & Testing
 - Daily Log
 - Field Quality Issues
- DURING CONSTRUCTION/CLOSEOUT (manila folders)
 - Warranty Items
 - Plant Accounting
 - Spare Parts
 - O & M Manuals
 - Training
 - Lien Releases/Notices of Furnishings
 - Record Drawings

Appendix D: Construction Procurement Times in Calendar Days

	Department submits, until bulletin	In bulletin	Until bid results to departments	Until dept. recommendation	At EEO office	At Board of Control	In Finance	At Contractor	In Law	Until signature	Total
TBIFPark	5	43	20	14	1	5	2	11	2	0	103
TBIFP Pavilion	4	37	25	1	12	2	2	25	3	0	111
California Golf	4	14	N/A	N/A	10	13	N/A	N/A	N/A	0	99
Madisonville Recreation Center	15	28	N/A	N/A	3	6	1	11	1	0	84
Amor Place Water Main	15	16	7	1	5	4	3	19	2	5	77
Kennedy Ave. Water Main	4	25	0	0	7	1	1	11	0	0	49
Harrison Pump Station	8	30	17	27	4	N/A	N/A	22	N/A	N/A	140
Range	4 to 15	14 to 43	0 to 25	0 to 27	1 to 12	1 to 13	1 to 3	11 to 25	0 to 3	0 to 5	49 to 140
Average Days	7.9	27.6	13.8	8.6	6.0	5.2	1.8	16.5	1.6	0.8	94.7

Note: the average total days is found by taking the average of each project total from start to finish. It is not equal to the sum of the averages for the component parts because, for two projects, all fields are not filled in because of missing interim dates. Thus these fields are not included in the averages for each component.

Appendix E: Sample “Right to Audit” and “Business Ethics Expectations” Clauses for Construction Contracts

Provided by R.L. Townsend & Associates

Examination of Records

1. Whenever the Owner enters into any type of contractual arrangement (including but not limited to lump sum contracts (i.e. fixed price or stipulated sum contracts), unit price, cost plus or time & material contracts with or without a guaranteed maximum (or not-to-exceed amounts), Contractor's , subcontractors' and sub-subcontractors' "records" shall upon reasonable notice be open to inspection and subject to audit and/or reproduction during normal business working hours. Such audits may be performed by an Owner's representative or an outside representative engaged by Owner. The Owner or its designee may conduct such audits or inspections throughout the term of this contract and for a period of three years after final payment or longer if required by law. Owner's representatives may (without limitation) conduct verifications such as counting employees at the Construction Site, witnessing the distribution of payroll, verifying information and amounts through interviews and written confirmations with Contractor employees, field and agency labor, subcontractors, and vendors.
2. Contractor's "records" as referred to in this contract shall include any and all information, materials and data of every kind and character, including without limitation, records, books, papers, documents, subscriptions, recordings, agreements, purchase orders, leases, contracts, commitments, arrangements, notes, daily diaries, superintendent reports, drawings, receipts, vouchers and memoranda, and any and all other agreements, sources of information and matters that may in Owner's judgment have any bearing on or pertain to any matters, rights, duties or obligations under or covered by any Contract Document. Such records shall include (hard copy, as well as computer readable data if it can be made available), written policies and procedures; time sheets; payroll registers; payroll records; cancelled payroll checks; subcontract files (including proposals of successful and unsuccessful bidders, bid recaps, etc.); original estimates; estimating work sheets; correspondence; change order files (including documentation covering negotiated settlements); backcharge logs and supporting documentation; invoices and related payment documentation; general ledger; records detailing cash and trade discounts earned, insurance rebates and dividends; and any other contractor records which may have a bearing on matters of interest to the Owner in connection with the contractor's dealings with the Owner (all foregoing hereinafter referred to as "records") to the extent necessary to adequately permit evaluation and verification of any or all of the following:
 - (a) Compliance with contract requirements for deliverables
 - (b) Compliance with approved plans and specifications
 - (c) Compliance with Owner's business ethics expectations
 - (d) Compliance with contract provisions regarding the pricing of change orders
 - (e) Accuracy of contractor representations regarding the pricing of invoices
 - (f) Accuracy of contractor representations related to claims submitted by the contractor or any of his payees.
3. Contractor shall require all payees (examples of payees include subcontractors and material suppliers) to comply with the provisions of this article by including the

requirements hereof in a written contract agreement between Contractor and payee. Such requirements to include flow-down right of audit provisions in contracts with payees will also apply to Subcontractors and Sub-Subcontractors, material suppliers, etc. Contractor will cooperate fully and will cause all Related Parties and all of Contractor's subcontractors (including those entering into lump sum subcontracts) to cooperate fully in furnishing or in making available to Owner from time to time whenever requested, in an expeditious manner, any and all such information, materials and data.

4. Owner's authorized representative or designee shall have reasonable access to the Contractor's facilities, shall be allowed to interview all current or former employees to discuss matters pertinent to the performance of this contract and shall be provided adequate and appropriate work space, in order to conduct audits in compliance with this article.
5. If an audit inspection or examination in accordance with this article, discloses overpricing or overcharges (of any nature) by the Contractor to the Owner in excess of one percent (1%) of the total contract billings or \$200,000 whichever is less, in addition to making adjustments for the overcharges, the reasonable actual cost of the Owner's audit shall be reimbursed to the Owner by the Contractor. Any adjustments and/or payments which must be made as a result of any such audit or inspection of the Contractor's invoices and/or records shall be made within 90 days from presentation of Owner's findings to Contractor.

Business Ethics Expectations

1. During the course of pursuing contracts with Owner and while performing contract work in accordance with this agreement, Contractor agrees to maintain business ethics standards aimed at avoiding any impropriety or conflict of interest which could be construed to have an adverse impact on the dealings with the Owner.
2. Contractor shall take reasonable actions to prevent any actions or conditions which could result in a conflict with Owner's best interests. These obligations shall apply to the activities of contractor employees, agents, subcontractors, etc. For example, Contractor employees, agents, subcontractors, material suppliers (or their representatives) should not make or provide to be made any employment, gifts, extravagant entertainment, payments, loans, free work, substantially discounted work, or other considerations to Owner's representatives, employees or their relatives. Similarly, Contractor employees, agents or subcontractors (or their relatives) should not receive any commissions, gifts, extravagant entertainment, payments, loans, free work, substantially discounted work or any other considerations from representatives of subcontractors, or material suppliers performing work on this project.
3. Contractor agrees to notify an appropriate Owner representative (i.e. the Director of Internal Audit and/or the Director of Loss Prevention) as soon as possible after Contractor becomes aware of any instance where there has been a failure to comply with the provisions of this article.
4. Upon request by Owner, Contractor agrees to provide a Management Representation Letter in a form agreeable to Owner stating that they understand the Owner has a Business Ethics Policy which provides that no Owner employees nor members of

their family shall accept anything of value from contractors, suppliers, vendors or others transacting or seeking to transact business with Owner and that they are not aware of any situations violating that policy which has not been previously reported to the Owner as provided in paragraph 3 above.

5. Contractor agrees to include this clause in all contracts with subcontractors and major material suppliers used for this project.
6. Contractor shall permit interviews of employees, reviews and audits of accounting or other records by Owner representative(s) to evaluate compliance with the business ethics standards. Such reviews and audits will encompass all dealings and activities of Contractor's employees, agents, representatives, vendors, subcontractors, and other third parties paid by Contractor in their relations with Owner's current or former employees or employee relatives.
7. Contractor is expected to disclose in writing to Owner any business arrangements such as commission arrangements, referral fee arrangements, ownership interests, profit sharing arrangements, bonus arrangements, etc. that it's organization, any affiliated organization, or any representatives (or relatives of representatives) of their organization have with any other contractor, Owner representative, or consultant involved in any way with the Owner's project.